



Invitation to Guest Lecture by

Prof. Dr Gerd Röpke (University of Rostock, Germany)

Thermodynamic Green Functions and Nonequilibrium Statistical Physics

Contents:

1. Many-particle systems in thermodynamic equilibrium
(second quantization, statistical operator, elementary perturbation theory)
2. Thermodynamic Green's functions
(definitions, spectral function, diagram technique)
3. Microscopic phenomena and partial summations
(self-energy and quasiparticles, polarization function and screening, bound states, cluster expansions)
4. Nonequilibrium systems
(irreversible processes, nonequilibrium statistical operator)
5. Stochastic processes
(one-step process and radioactive decay, Brownian motion and Langevin process, Fokker-Planck equation)
6. Quantum master equations
(Pauli equation, reaction and relaxation processes, interaction with the radiation field)
7. Kinetic equations
(Boltzmann equation, transport coefficients, random phase approximation and Vlasov equation, hydrodynamic equations)
8. Linear response theory
(Fluctuations and response in equilibrium systems, variational approach, transport processes)

This lecture is equivalent to a full semester (facultative) course with 2 hours of lecture per week. It will be given in four blocks of 6 hours (3 lectures a 2 hours), each block during a week in March, April, May and June, respectively.

The start of the lecture is on March 4, 2013, at 3 p.m. (room 405, schedule agreement),
First lectures on Tuesday, 5.3. and Wednesday, 6.3.

For the preparation of these guest lectures (providing lecture notes material in advance) and for communicating the schedule, all interested students and colleagues are kindly asked to send asap (best before February 28) an email to the responsible contact person at IFT, prof. Dr hab. David Blaschke <blaschke@ift.uni.wroc.pl> .

dr hab. Janusz Jędrzejewski, prof. UW

prof. dr hab. Jan Sobczyk

prof. dr hab. Ludwik Turko

Wrocław, February 28, 2013

Plan wykładów profesora Gerda Roepke:

3.04.2013 (środa) godz. 16:00 – 18:00 sala 511

4.04.2013 (czwartek) godz. 13:00 – 15:00 sala 511
15:00 – 17:00 sala 511